

Foodstuffs packaging with clamping elements

The invention relates to foodstuffs packaging, in particular  
5 an egg box, having a bottom part, which has at least one row  
of shaped depressions for accommodating separate articles, in  
particular eggs, and having a lid part, which is arranged for  
swing action on the bottom part, the bottom part and the lid  
part being provided with complementary clamping elevations  
10 and clamping openings.

Egg boxes with complementary clamping elevations and clamping  
openings on the bottom part and on the top part are known per  
se (for example from FR-A-2 441 549). In the case of the  
15 known packaging, however, the clamping elevations and the  
clamping openings are arranged such that, when egg boxes are  
stacked one above the other, the clamping elevations of one  
egg box engage in the clamping openings of the egg box lo-  
cated above and/or beneath the same. Although this arrange-  
20 ment of the clamping elevations and clamping openings allows  
egg boxes which are stacked directly one above the other to  
be securely interconnected, this proves to be disadvantageous  
if egg boxes are to be moved individually, for example for  
sales purposes. Beyond the task of holding together egg boxes  
25 which are stacked directly one above the other, the arrange-  
ment of the clamping elevations and openings does not perform  
any additional function in the case of the known egg boxes.

30 The object of the invention is to provide foodstuffs packag-  
ing of the type mentioned in the introduction in the case of  
which the function of the clamping elements is improved.

The object is achieved according to the invention by food-stuffs packaging having the features of Claim 1. Advantageous developments can be gathered from the subclaims.

- 5 In the case of foodstuffs packaging, in particular an egg box, having a bottom part, which has at least one row of shaped depressions for accommodating separate articles, in particular eggs, and having a lid part, which is arranged for swing action on the bottom part, the bottom part and the lid
- 10 part being provided with complementary clamping elevations and clamping openings, the invention provides that the clamping openings are arranged on one of the two, the lid part or the bottom part, and the clamping elevations are arranged on the other, the bottom part or the lid part, the clamping
- 15 openings being offset laterally in relation to the clamping elevations.

As a result of the configuration according to the invention, the clamping elevations and clamping openings of foodstuffs packaging units which are stacked directly one above the other are not arranged in alignment with one another and thus cannot engage one inside the other. This avoids the situation where egg packaging units which are stacked directly one above the other get stuck together. However, and herein lies the ingenuity of the invention, it is possible for foodstuffs packaging units which are stacked one above the other to be connected to one another with clamping action, to be precise if they are offset in relation to one another. This provides a surprising additional function. It is usually the case that foodstuffs packaging units, once their contents have been used up, perform no further function; they are thrown away once their contents has been removed. The invention provides a second possible use for the foodstuffs packaging, in par-

ticular for egg boxes. This is because the complementary clamping elevations and openings allow the foodstuffs packaging units, which are empty following use, to continue to be used, to be precise as clamping-type building blocks. It is thus possible for the foodstuffs packaging units according to the invention, once they have fulfilled their packaging function, still to be used as a toy. Since foodstuffs packaging units have comparatively large dimensions in relation to classic clamping-type building blocks, they are suitable, in particular, for forming comparatively large structures, for example for constructing toy castles for children, which, using conventional clamping-type building blocks, can only be produced with comparatively high outlay, if at all. Their size thus makes it possible for even large structures to be constructed rapidly. Furthermore the foodstuffs packaging units according to the invention have the advantage that they are available as clamping-type building blocks at more or less no cost.

The arrangement of the clamping elevations and clamping openings according to the invention, furthermore, has the advantage that the stackability of the foodstuffs packaging units in the open state remains unaffected. The packaging units can still be stacked, and if appropriate also easily destacked, in the open state. In order that this destacking (denesting) takes place straightforwardly, the clamping elevations and/or clamping openings are preferably respectively no higher or deeper than a maximum nesting height. The maximum nesting height depends on the concrete parameters of the respective foodstuffs packaging, in particular the desired denesting capability and the amount of space required. Depending on the material thickness and the coefficient of friction of the material, the nesting height is usually between 4 and 15 mm,

and is preferably between 7 and 9 mm. By virtue of the stackability thus achieved, the storage costs decrease both for the manufacturer and for the packaging company and packaging can take place more cost-effectively.

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The clamping openings are expediently arranged such that, in the closed state of the lid part, they are arranged approximately centrally over two adjacent clamping elevations in a row. Such an offset allows a plurality of foodstuffs packaging units according to the invention to be interconnected particularly well. This makes it possible for stable wall sections running over relatively long distances to be constructed or even for corner connections to be produced.

15 For the better interconnection of a plurality of foodstuffs packaging units, the top edge of the lid part is expediently configured such that its spacing from the nearest clamping opening is, at most, equal to the free spacing between adjacent clamping elevations. Free spacing is understood as being  
20 the clear distance between two adjacent clamping elevations. This configuration achieves the situation where the clamping elevations of a foodstuffs packaging unit placed on top engage either in the clamping openings on the lid part of the bottom foodstuffs packaging unit or engage on the far side of  
25 the top edge of the lid part. This avoids the situation where clamping elevations rest directly on the top side of the lid part, as a result of which the top foodstuffs packaging unit would be skewed and a reliable and correct fit of the foodstuffs packaging unit would be prevented.

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The clamping elevations and the clamping openings expediently have a conicity of  $2^\circ$  to  $15^\circ$ , preferably of  $7^\circ$  to  $9^\circ$ . On the one hand, such a conicity makes it possible to achieve a good

level of reliability for the clamping connection; on the other hand, however, it also allows sufficiently easy separation of the foodstuffs packaging units, without an excessive amount of force having to be applied for this purpose. This 5 applies, in particular, to the denesting of foodstuffs packaging units stacked in the open state.

The clamping elevations are preferably provided at their bottom border with an annular structure as indent. An annular 10 structure of toric design, with the result that a toric recess forms, has proven particularly successful. On account of its shape, it has increased elasticity in this region, by means of which the packaged foodstuffs are protected particularly well against damage by impact, for example by being set 15 down with force. Such indents thus improve not just the protective function but also, in addition, the overall visual impression given by the foodstuffs packaging.

At least six clamping elevations, arranged in a double row, 20 are preferably provided. It goes without saying that a corresponding number of clamping openings, e.g. four, then also have to be provided. This number makes it possible to achieve a stable clamping-type interconnection of a plurality of foodstuffs packaging units. Of course, it is also possible to 25 provide eight or more clamping elevations.

According to a particularly preferred embodiment, which possibly also merits independent protection, the lid part has a trough, which is open in the upward direction, and a covering 30 means, which covers the trough in the upward direction. The term "open in the upward direction" here is to be understood as meaning that, in the closed state of the lid part, the trough is accessible from the outside. This achieves the

situation where, on the one hand, the trough provides an additional stiffening element and, on the other hand, the trough and the covering means produce a space into which items can be inserted. The covering means prevents the inserted item from dropping out of the trough in an undesired manner. For this purpose, the covering means is designed such that, in conjunction with the trough, it forms a closed-off accommodating space. The flanks on the base of the trough preferably have no through-passages or only through-passages with an inside width which is small enough in order to prevent the articles which are to be inserted from passing through in an undesired manner. The articles which are to be inserted have preferably already been inserted by the supplier of the foodstuffs packaging, but it is also possible, if appropriate, for them only to be inserted during packaging of the foodstuffs or, at a later stage, by a retailer. The item may be, for example, leaflets containing recipes or else small utensils, in particular a child's toy, an egg spoon and/or a portion pack containing herbs and spices. The foodstuffs packaging then provides the customer not just with the foodstuffs contained in it but also, as an added extra, with the item inserted into the trough. In addition to its securing function, the covering means also has a further, important function. The user must first remove the covering means from the trough in order to reach the item located therein. This puts the user in a cheerful state of expectation as to what he is going to find beneath the covering means, this being similar to the sense of surprise when unwrapping presents. Since the user already knows when he purchases the foodstuffs that he will later experience this pleasant sense of surprise, he already regards the foodstuffs packaging in a favourable light as he is making the decision to purchase it. The foodstuffs packaging according to the invention thus per-

forms the important function of packaging to a particularly great extent, that is to say in addition to protecting the goods contained in it, it also encourages the customer to make a purchase.

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Furthermore, the trough also has a stiffening effect for the lid part. By way of its flanks, it forms an additional ribbing arrangement for the lid part, which thus enhances rigidity. This also improves the protective function of the foodstuffs packaging according to the invention. This thus results overall in a surprising combined effect, that is to say, on the one hand, the foodstuffs packaging is stiffened, and the foodstuffs accommodated therein are thus better protected, and, on the other hand, the presentation is improved by an accommodating space being produced for small items.

The covering means is preferably a sticker. The trough can thus be covered in a particularly cost-effective manner.

Moreover, the sticker provides a printing surface which can be utilized for further presentation purposes or for other advertising imprints.

In the case of foodstuffs packaging with two rows of shaped depressions, the trough is expediently arranged such that it is located over the centre between these two rows. It is also possible, however, to provide a plurality of troughs, which are then preferably arranged parallel to one another.

It is expedient if the lid part is provided with retaining depressions, which are preferably connected to the trough. The retaining depressions additionally stiffen the lid part. In addition, they may be shaped such that they interact with the articles which are to be accommodated, that is to say, in

the case of an egg box, in particular with the top side of the eggs. This makes it possible to prevent undesired movement of the eggs in the shaped depressions as occur, for example, when an egg box is being moved quickly, in particular 5 during transportation. If the trough is connected to the retaining depressions, then this also has the advantage that a considerably larger accommodating space is produced at the same time as the rigidity of the lid part is increased.

10 The trough and the retaining depressions expediently are approximately the same depth. As a result, the floors of the respective depressions are located at the same height so that, overall, they form a planar surface. This has the advantage of providing the lid part, and thus the foodstuffs 15 packaging as a whole, with a more pleasing appearance than would be the case with different depths and the resulting crevice-containing structure of the floor. It is also possible for the trough to have a greater depth than the retaining depressions, with the result that, in the accommodating 20 space, a channel forms in the region of the trough. On the one hand such a channel may be quite desirable for the items which are to be inserted. On the other hand, the channel additionally has a stiffening effect, with the result that the rigidity of the lid part is yet further improved.

25 The troughs and/or the retaining depressions preferably have/has a depth which is no greater than a maximum nesting height of the foodstuffs packaging. Limiting the depth to the maximum nesting height improves the stackability of the food-30 stuffs packaging unit in the open, not yet filled state. A particular advantage resides in the fact that it is also possible for the foodstuffs packaging units to be stacked when the trough has already been closed by the covering means.

This is advantageous in particular in the case where the covering means is a sticker, for example a label. It is then also possible for already labelled foodstuffs packaging units to be stacked. This allows the foodstuffs packaging units to  
5 be labelled, and provided with the items which are to be inserted, before being filled. The nesting height is usually between 4 and 15 mm, and is preferably between 7 and 9 mm.

The retaining depressions are preferably offset laterally in  
10 relation to the shaped depressions. Offset laterally means that the retaining depressions in the lid part, rather than being arranged precisely over the respective shaped depressions of the base part, are offset horizontally, with the result that a retaining depression is arranged approximately in  
15 the centre over two adjacent depressions in a row. In the case of the offset arrangement, a smaller number of retaining depressions is sufficient for acting on all of the articles packaged in foodstuffs packaging. For example, in the case of an egg box for six eggs, four retaining depressions are then  
20 sufficient. For further stiffening of the retaining depressions, it may be expedient if the retaining depressions have an indent on their floor. This indent may be curved concavely or preferably convexly, i.e. in the upward direction.

25 It is expedient for the retaining depressions to be designed as clamping openings and for the shaped depressions to be designed as clamping elevations. For example, the shaped depressions may be provided with a bottom border which is dimensioned such that it engages in a force-fitting manner in  
30 the clamping openings. This allows the foodstuffs packaging unit to be designed as a clamping-type building block with only a small amount of additional outlay.

The invention is explained in more detail hereinbelow with reference to the egg boxes illustrated in the drawing as exemplary embodiments. In the drawing:

- 5      Figure 1 shows a perspective view of a first exemplary embodiment of the egg box according to the invention in the open state;
- Figure 2 shows a perspective view of the egg box according to Figure 1 in the closed state;
- 10     Figure 3 shows the egg box according to the invention; and
- Figure 4 shows a plurality of egg boxes in clamping-type interconnection with one another.

An egg box according to the invention is illustrated in the  
15     swung-open state in Figure 1 and in the closed state in Figure 2. The egg box, which is designated 1 overall, comprises a bottom part 2 and a lid part 3, which is fastened for swing action on the bottom part 2 via a flexible hinge 25, and a sticker 7 fitted on said lid part (see Figure 3). In the  
20     closed state, the lid part 3 rests on the bottom part 2 and covers over the latter completely. Pivoting the lid part 3 through approximately 180° about the axis of the flexible hinge 25 moves the lid part 3 into its open position. In the latter, the lid part 3 is located approximately in the same  
25     plane as the base part 2. In this position, a plurality of egg boxes can be stacked in a space-saving manner.

The base part 2 has a plurality of shaped depressions for accommodating eggs. In the exemplary embodiment illustrated,  
30     the shaped depressions 21 are arranged in two parallel rows of in each case three shaped depressions 21. These shaped depressions 21 are formed by a corresponding configuration of the wall of the base part 2 and by two supports 23 arranged

in the centre. The shaped depressions are configured such that eggs inserted therein do not come into contact with one another. In order to fix the lid part 3 in the closed state, two retaining noses are arranged on a front side of the base  
5 part 2.

The lid part 3 is of tray-like configuration and comprises a rear part, a top part 31, two side parts 32 and a front part 33. The front part 33 contains two openings 34, which are intended for interacting with the noses 24 for the base part 2 in order to lock the lid part 3, in the closed state, to the base part 2. In the closed state, the lid part 3, together with the base part 2, bounds an interior in which the eggs are arranged in a protected manner.  
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The configuration of the top part 31 of the lid part can be seen in more detail in Figure 2. The top part 31 is enclosed by a top edge 30. The top part 31 is provided with four retaining depressions 36. The retaining depressions 36 are offset in relation to the shaped depressions 21 of the base part 2, to be precise such that, in the closed state of the egg box 1, the retaining depressions 36 are arranged centrally in each case over two shaped depressions 21 which are directly adjacent to one another in a row. In the case of the egg box  
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25. 1 with six shaped depressions 21 which is illustrated in the exemplary embodiment, four retaining depressions 36 are thus arranged in the top part 31 of the lid part 3. The retaining depressions 36 each have a floor 38 containing a convex upwardly curved recess 37. The recess 37 serves for stiffening  
30 the floor 38 of the retaining depression 36. By way of the border of the floor 38, each of the retaining depressions 36 has a stabilizing effect on the top side of the eggs arranged in the adjacent rows of shaped depressions 21. It is not ab-

solutely necessary, for this purpose, for the eggs to come into contact with the border of the floor 38 when inserted; in particular in the case of relatively small eggs, this is often not the case. The function of the retaining depression 5 36 is, rather, to limit undesired movement of the top side of the eggs. This makes it possible to avoid damage by way of eggs in adjacent shaped depressions 11 striking against one another as a result of abrupt and rough handling of the egg box. The retaining depressions 36 also serve for additionally 10 stiffening the lid part 3. The egg box 1 can thus better protect the packaged eggs against damage. Moreover, the stacking capability of the egg box 1 improves as a result.

Figure 4 illustrates a plurality of egg boxes 1, 1', 1'' in 15 clamping-type interconnection with one another. A further egg box 1\*, which is not in clamping-type interconnection with the other egg boxes, is also illustrated. As can be seen from Figure 4 or, in detail, also from Figure 2, the bottom part 2 of the egg packaging 1 has a clamping elevation 5 at the respective bottom ends of the shaped depressions 21. This 20 clamping elevation is designed as an encircling border of the respective shaped depression 21. The retaining depressions 36 are formed on the lid part 3 so as to function as clamping openings 6. The dimensions of the clamping elevations 5 and 25 clamping openings 6 are coordinated with one another such that the clamping elevations 5 can be accommodated in a force-fitting manner in the clamping openings 6. Since the retaining depressions 36 have the same spacing between one another as the shaped depressions 21 with their clamping elevations 5, it is possible for a plurality of egg boxes 1, 1' 30 to be connected with clamping action such that they are offset in relation to one another. It is expedient here for the top edge 30 of the lid part 3 to be drawn in to such an ex-

tent that its spacing from the nearest clamping opening 6 is smaller than the spacing of the clamping elevations 5 from one another. This ensures that, in the case of one egg box 1 being mounted in an offset manner on another box 1', none of 5 the shaped elevations 5 collides with the top part 31 of the lid part 3. This avoids a skewed fit of the top egg box 1. A reliable clamping fit is achieved as a result.

The offset arrangement of the clamping elevations 5 and of 10 the clamping opening 6 further results in it not being possible for egg boxes 1, 1\* which are stacked precisely one above the other to get stuck together. This can be seen in the top part of Figure 4. This is the advantage that filled egg boxes, which are usually stacked directly one above the other 15 for storage or sales purposes, cannot become stuck to one another. This avoids, in a simple but effective manner, the situation where, when the uppermost egg box 1' is removed, an egg box 1 located therebeneath, or an entire stack of egg boxes, is accidentally also moved along therewith, which 20 could result in the stack toppling over and thus in the eggs being damaged.

The offset arrangement also has the advantage that, with egg boxes 1, 1' stacked precisely one upon the other, the clamping elevations 5 rest in each case on the top part 31 rather 25 than being located over clamping openings 6, which would result in them having to be borne by the sticker 7. This counteracts the risk of the sticker 7 being damaged due to overloading.

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As can further be seen from Figure 4, it is also correspondingly possible for a plurality of egg boxes 1, 1'' to be con-

nected to one another at a corner. This makes the construction of corner structures possible.

The clamping elevations 5 on the underside and the clamping openings 6 on the top side allow the egg boxes 1 to be put to a second use as clamping-type building blocks. Since they are available cost-effectively and have comparatively large dimensions, they are suitable as a toy for children of different ages. Using the egg boxes as clamping-type building blocks, comparatively large structures, for example toy houses or toy castles, can be constructed rapidly and cost-effectively.

According to a further aspect of the invention, a trough 4 is arranged approximately in the centre of the top part 31 of the lid part 3. The trough 4 is oriented parallel to the axis of the flexible hinge 25 and extends over at least half of the lid part 3, in the example illustrated over approximately 3/4 of the length. In the exemplary embodiment illustrated, the trough 4 connects all four retaining depressions 36 to one another. This produces a receiving space 40 which, as seen from above, is in the form of a rounded letter "H". In the case of the exemplary embodiment illustrated in Figure 2, a floor 41 of the trough 4 is located at a lower level than the floor 38 of the retaining depressions 36. This produces a central channel within the accommodating space 40. It goes without saying that the floor 41 of the trough 4 may also be located at a higher level than the floor 38 of the retaining depressions 36. In the case of the exemplary embodiment illustrated in Figure 4, the floor 41 is located at the same height as the floor 38 of the retaining depressions 36. The accommodating space 40, which is produced by the retaining depressions 36 being connected to the trough 4, is compara-

tively large. It is suitable for accommodating both elongate items and items of irregular configuration, for example a bottle opener, by way of its widened end. The length of the trough 4 is expediently selected such that the item which is  
5 to be accommodated can be conveniently inserted therein. It is not imperative for the length to be predetermined by the spacing of the retaining depressions 36; it may also be selected to be longer or shorter, depending on the respective requirements.

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In order for it to be possible for egg boxes which are stacked in the open state to be easily separated from one another, the flanks of the trough 4 and of the retaining depression 36 are inclined in relation to the vertical. The degree of inclination depends on the material properties, in particular the material thickness and the coefficient of friction, and is usually between  $2^\circ$  and  $20^\circ$ , preferably between  $6^\circ$  and  $9^\circ$ . This allows the stacked egg boxes to be de-  
15 stacked again in optimum fashion, i.e. a good denesting capability is achieved.  
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In order to avoid the situation where the item inserted into the accommodating space 40 drops out during transportation, a sticker 7 is provided. The latter is adhesively bonded to the  
25 top part 31 of the lid part 3 such that it extends over the four retaining depressions 36 and the trough 4, with the result that the entire accommodating space 40 is covered by the sticker 7. However, the sticker 7 serves not just for preventing the inserted item from dropping out. It also has the  
30 function of hiding from the user's view the item which has been inserted into the accommodating space 40. As a result, it is only when he tears off the sticker 7 from the lid part of the egg box 1 that the user knows what kind of item is

hidden behind it in the accommodating space 40. This achieves a very much desirable sense of surprise, and the user is left with a greater and more positive impression of the egg box.

The sticker 7 has the further advantage that it also provides

5 a printing surface which can be utilized for product information or advertising. The sticker shown in Figure 3 may be of any desired size, as long as it covers the trough 4 and the retaining depressions 36 to a sufficient extent. It is also possible for this sticker to be of considerably larger con-

10 figuration; its front side may thus be extended as far as the bottom edge of the front part 33 of the lid part 3.